

MECHANISM FOR OBTAINING AND PAYING FOR POSTAGE

Field of the Invention

5 This invention relates to a method for obtaining a code to be used for postage. The invention is applicable to, but not limited to, a method for obtaining and paying for a postage code utilising a wireless communication device such as a mobile phone.

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Background of the Invention

It is known to purchase postage stamps in order to pay for the postage of, for example, a letter. A person
15 wishing to send a letter by post is required to go to a shop, or the like, to purchase the postage stamp(s). This not only requires the person to travel to the shop, but also limits the person to purchasing the stamp(s) at a time when the shop is open.

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A known method, which alleviates the above-mentioned problems, has recently been implemented by the German postal service, Deutsche Post, under the name "Stampit" as described at:

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<http://www.deutschepost.de/brief/stampiten/>.

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This system provides a method of franking post using a personal computer, or similar appliance, connected to the Internet. A user installs a required software application onto their computer, or similar appliance, and registers to use the "Stampit" service. The user also needs to set up a payment method.

Once the user has registered, the user is able to purchase postage credit over the Internet, which is subsequently stored in their postage account.

5 Subsequently, when the user wishes to send an item of post, they select the type of postage they require. The computer then connects to the "Stampit" server on the Internet, and requests a matrix code. The "Stampit" server sends the matrix code back to the computer, which
10 can then be printed onto, for example, an envelope in place of a stamp. The price of the postage is then deducted from the user's credit in their postage account.

This method provides the advantage that the user is not
15 required to travel to a shop or the like and purchase postage stamps. Furthermore, the user is able to purchase postage at a time convenient to them, rather than being limited by the opening times of a shop or the like.

20 However, the inventor of the present invention has recognised significant limitations with the above method. In particular, the Deutsche Post system suffers from the drawback that the user is required to have a computer, or
25 similar appliance, that is capable of connecting to the Internet. It also requires the user to provide payment information over the Internet, and that account details of the user are stored on the Internet. Furthermore, the method suffers from the requirement to set up accounts
30 from which postage is paid and purchasing significant amounts of postage credit to justify supporting the "Stampit" service.

However, it is envisaged by the inventor of the present invention that an individual is more likely to spend substantially smaller amounts of money on postage. Notably, such small amounts would not justify the setting
5 up of a "Stampit" account. As a consequence, the inventor of the present invention envisages that the Deutsche Post "Stampit" system will rarely be utilised by individual users or small groups.

10 Thus, a need exists for an improved method for obtaining and paying for postage, particularly for individuals or small groups, wherein the abovementioned disadvantages may be alleviated.

15 **Statement of Invention**

In accordance with a first aspect of the present invention, there is provided a method for obtaining a postage verification code, as claimed in Claim 1.

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In accordance with a second aspect of the present invention, there is provided wireless communication device, as claimed in Claim 12.

25 In accordance with a third aspect of the present invention, there is provided a Postal server, as claimed in Claim 14.

In accordance with a fourth aspect of the present
30 invention, there is provided a storage medium storing processor-implementable instructions, as claimed in Claim 15.

In accordance with a fifth aspect of the present invention, there is provided a Postal server, as claimed in Claim 16.

- 5 In accordance with a sixth aspect of the present invention, there is provided a Postal sorting machine, as claimed in Claim 20.

- 10 In accordance with a seventh aspect of the present invention, there is provided a Postal sorting machine, as claimed in Claim 21.

Further aspects of the present invention are as defined in the dependent Claims.

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- In summary, a mechanism, corresponding apparatus and method for obtaining and paying for a postage verification code are described. Preferably, a wireless communication device, such as a mobile phone, is used in the process. By using a wireless communication device and wireless communication network, payment information for postage verification codes do not need to be communicated. The postage charges can be added to, say, a monthly bill for the user's wireless communication device.
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Brief Description of the Drawings

- Exemplary embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawings, in which:
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Figure 1 illustrates a wireless communication system adapted to support the inventive concepts of the preferred embodiments of the present invention,

5 Figure 2 illustrates a flow diagram of a process for a user to obtain a postage verification code in accordance with the preferred embodiment of the present invention, and

10 Figure 3 illustrates the postal server of figure 1 in more detail, in accordance with the preferred embodiment of the present invention.

Description of Preferred Embodiments

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In summary, the present invention proposes a method and associated apparatus for obtaining a postage verification code, the method and associated apparatus being described utilising a communication device, such as a mobile phone.

20 The preferred embodiment of the present invention is described with reference to a portable cellular phone capable of operating in, for example, current and/or future generations of wireless cellular technology. However, it is within the contemplation of the present invention that the inventive concepts described herein are equally applicable to any other fixed or wireless communication device, such as a personal data assistant (PDA), a portable or mobile radio, a laptop computer or a wirelessly networked personal computer (PC) or indeed any
25 other wireless communication device that a mobile user may possess whilst wishing to remotely obtain a postage code/stamp.
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Figure 1 illustrates a preferred arrangement 100 for implementing the present invention. A postal server 110 is capable of generating postage verification codes. The postage verification codes are preferably generated upon request from, for example, an individual wishing to post an item such as a letter. Such an individual wirelessly transmits a postage verification code request message from a mobile communications device, which for the illustrated embodiment is in the form of a mobile phone 120, to a postal server 110.

Such a wireless request message may be made in any appropriate manner. For example, and as illustrated, the user of a mobile phone 120 may wirelessly transmit such a request message by way of a Short Message Service (SMS) message sent to a Postal Server's telephone number via a Global System for Mobile communications (GSM) network (not shown). For other wireless communication devices any other communication link, provided between the mobile phone 120 and the postal server 110, may be used.

The GSM Short Message Service is defined in the following sections of the GSM specification:

GSM 03.40: Digital cellular telecommunications system; Technical realization of the Short Message Service (SMS); Point-to-Point (PP); and

GSM 04.11: Digital cellular telecommunications system; Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface.

The wireless request message may alternatively be sent using any other appropriate means available, for example

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using the GSM Unstructured Supplementary Service Data mechanism, defined in the GSM standard in the documents GSM 02.90 (USSD Stage 1) and GSM 03.90 (USSD Stage 2).

5 The wireless request message preferably includes information relating to the type of postage required by the user. For example, such information may include at least one or more of the following:

- (i) The price of the postage required;
- 10 (ii) The weight of the letter/parcel to be posted;
- (iii) The class of postage (e.g. in the United Kingdom 1st class or 2nd class); and/or
- (iv) An indication of the destination (e.g. post/zip code) of the letter/parcel to be posted.

15 Alternatively, the postal server 110 may include a number of telephone numbers, where each number corresponds to a price, class, etc. of postage. Thus, by selecting the appropriate telephone number to send the wireless request message to, the user correspondingly selects the type of
20 postage that the user requires.

It is envisaged that the wireless request message may further include information identifying the user. For
25 example, such information may include at least one or more of the following:

- (i) The name of the user;
- (ii) The mobile telephone number of the user;
- (iii) The International Mobile Subscriber
30 Identification (IMSI) number of the Subscriber Identity Module (SIM) of the user; and/or
- (iv) The International Mobile Equipment Identification (IMEI) number of the mobile phone 120.

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It is further envisaged that such information identifying the user may be provided within the data of the request message transmitted by the mobile phone 120 to the postal server 110. Alternatively, the information may be included within the structure of the message, for example within a section of a header of the request message.

On receipt of the request message, the postal server 110 extracts from the message the information relating to the type of postage required by the user. Alternatively, where the telephone number to which the message is sent defines the type of postage required, the postal server 110 ascertains the type of postage required. The postal server 110 preferably also identifies the identity of the user, at this time, so that appropriate postal charges can be added to, say, the user's monthly mobile phone bill.

Preferably, the information relating to the identity of the user includes the mobile telephone number of the user. However, where such information includes the IMSI, IMEI and/or name of the user, the postal server uses such information to obtain the mobile telephone number of the user.

Where it is necessary for the postal server 110 to obtain the mobile telephone number of the user, this may be performed in any available manner. For example, the user may have pre-registered with the postal server 110, providing details such as name, mobile telephone number, IMEI, IMSI, etc. Alternatively, the postal server 110 may have access to one or more databases from which the

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postal server 110 is able to obtain the mobile telephone number of the user from the name, IMEI and/or IMSI of the user. Such databases may be provided by network operators, one of which the user is subscribed with, or
5 any other third party. Such databases may even be maintained by the administrator of the postal server 110 itself, the data for which can be obtained from network operators, etc.

10 Having obtained/ascertained the type of postage required, and the mobile telephone number of the user, the postal server 110 generates a postage verification code, which it sends back to the mobile phone 120 of the user, for example by any suitable mechanism such as a SMS or a USSD
15 message.

On receipt of the postage verification code, the mobile phone 120 may display, or otherwise provide to the user, the postage verification code. The user is then able to
20 write, print or otherwise apply/affix the code to the envelope or external surface of the letter/parcel to be posted, in place of a traditional stamp.

The postage verification code generated by the postal
25 server 110 is preferably generated using information obtained from the wireless request received from the user. For example, in a preferred embodiment, the request from the user contains the destination post/zip code of the letter/parcel. The postal server 110, for
30 example utilising an encoding algorithm, uses the addressee's postcode, and perhaps the sender's identifier, to generate a request-specific postage verification code. Other relevant information may also

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be used in generating the postage verification code, such as the date and/or time of the request, the mobile telephone number of the user, etc. By using such information, the postage verification code generated may
5 be unique for each request.

Preferably, the generated code includes a string of alphanumeric characters, which to the user is meaningless, the information being used to generate it
10 not being apparent to the user. This reduces the likelihood of a person attempting to randomly generate/forged postage verification codes.

It is within the contemplation of the invention that a
15 microprocessor of the mobile phone 120 (or other wireless communication device) may be re-programmed with an algorithm (such as that described with respect to FIG. 2) supporting the inventive concepts of the present invention, as described above. Furthermore, it is
20 envisaged that wireless postage payment data, such as optional telephone numbers to obtain a particular price, class of postage, may be input to a memory element associated with the microprocessor.

25 More generally, according to the preferred embodiment of the present invention, such re-programming to facilitate a request and reception of a postage code, may be implemented in a respective mobile phone 120 (or other wireless communication device) in any suitable manner.
30 For example, a new memory chip or processor may be added to a conventional mobile phone 120 (or other wireless communication device). As such, the required adaptation may be implemented in the form of processor-implementable

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instructions stored on a storage medium, such as a floppy disk, hard disk, programmable read only memory (PROM), random access memory (RAM) or any combination of these or other storage media. Alternatively, such a re-

5 programming operation may be achieved using over-the-air-reprogramming (OTAR) of the mobile phone 120.

Figure 2 is a flow diagram of a preferred process 200 for a user to obtain wirelessly a postage verification code.

10 The user initiates the process, in step 210, by sending, for example, an SMS message to the postal server. The message contains a request for a postage verification code. The message preferably also contains the destination post/zip code and any information that may be

15 required by the postal server to generate the postage verification code. The mobile telephone number of the user is preferably also included in the request message, for example within the structure of the message, such as in a part of the header of the message.

20 In step 220 of the process, the postal server receives the request message. The required information, preferably including the mobile telephone number of the user, is extracted from the message. The postal server

25 in the next step 230, using the information extracted from the request message, then generates the postage verification code.

Next, the postal server sends an SMS message back to the

30 mobile phone 120 of the user, as shown in step 240. Advantageously, an identification of the mobile phone 120 or the user of the mobile phone 120 has been ascertained such that a charge associated with the postage

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verification code can be attributed to the mobile phone 120.

5 The message transmitted to the mobile phone 120 contains the requested postage verification code. In the next step 250, this message is received by the mobile phone 120 of the user and displayed, or otherwise provided, to the user. In the final step 260, the user, writes, prints or otherwise applies/affixes the postage
10 verification code to the item, such as a letter/parcel, to be posted.

Figure 3 illustrates the postal server 110 of figure 1 in more detail. The postal server 110 comprises an
15 interface port 320, through which the postal server is capable of sending and receiving information and messages via, for example, the Internet 140. The postal server 110 further includes a decoder 330 that decodes the wireless message requesting a postage verification code.
20 The decoder 330 preferably includes a buffer 340, which for the illustrated embodiment is a first-in first-out (FIFO) buffer, to co-ordinate multiple received requests in a controlled manner. The postal server 110 further includes an encoding software application 350 to generate
25 the postage verification codes, preferably operably coupled to a database 360, for use in subsequently validating postage verification codes applied to posted items.

30 Also connected to, or forming a part of, the Internet 140 is an SMS interface server 370, which is connected to a mobile communication network such as a GSM network 380. When a user sends a request for a postage verification

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code using an SMS message, the message is transmitted over the GSM network 380 to the SMS interface server 370. The SMS interface server 370 converts the SMS message into a hypertext mark-up language (HTML) format message and transmits the message, via the Internet 140, to the postal server 110.

The HTML format message is received by the postal server 110 at interface port 320, which takes the message, decodes it in decoder 330 and stores it in the buffer 340. The message is then read by the encoding software application 350 and the required information extracted. The encoding software application 350 then generates a substantially unique postage verification code. The encoding software application 350 subsequently creates an HTML format message containing the postage verification code and transmits the code, via the interface port 320, over the Internet 140 to the SMS Interface Server 370. The encoding software application 350 also preferably stores the postage verification code in the database 360. Furthermore, it is envisaged that the encoding software application 350 may also store the information extracted from the request message and the mobile telephone number of the user in the database.

It is within the contemplation of the invention that the functionality of the encoding software application 350 may be implemented in hardware, software or firmware, dependent upon the particular constraints or design of the Postal Server 110.

Although for the illustrated embodiment the database 360 is provided as a part of the postal server 110, it will

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be appreciated that the database 360 may be provided remote from the postal server 110, being hosted by, for example, a different server. In this scenario, the postage verification code and any associated data is sent
5 to the host of the database 360 via the Internet 140, or via any other suitable alternative means, where it is stored in the database.

The SMS interface server 370 converts the HTML message to
10 an SMS message, and transmits it over the GSM network 380 back to the user of the mobile phone 120, using the mobile telephone number of the user provided in the HTML message from the postal server 110. On receipt and decoding of the SMS message, the mobile phone 120
15 displays, or otherwise provides, the postage verification code to the user. The user may then subsequently apply the postage verification code, in an appropriate manner, to the outside of the letter/parcel to be posted.

20 When the user subsequently posts the letter/parcel, for example at a post box or Post Office, with the postage verification code written, printed or otherwise applied to the outside of the letter/parcel, the letter/parcel is transferred to a sorting office of the postal service.

25 At the sorting office, as with conventional letters/parcels, the destination address, including the post/zip code of the letter/parcel, is read by automated sorting machines capable of reading alphanumeric characters provided on the outside of letters and
30 parcels.

For the present invention, the postage verification code is also read, and checked for validity. Each postage

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- verification code read from a letter/parcel is decoded, for example using a decoding algorithm, and the information used to create the code is obtained. As mentioned above, such information preferably includes the
- 5 postcode of the destination address of the letter/parcel. Further information may include: the date and/or time of the request for the postage verification code, the mobile telephone number of the user, etc.
- 10 This information can then be used to ascertain whether the code is valid. For example, the postcode is compared to that read from the letter/parcel to ensure that they are the same. Where the date and/or time of the request for the postage verification code are used, each postage
- 15 verification code can be provided with a valid time period in which they may be used, and so if this time period has expired the postage verification code is no longer valid.
- 20 In an alternative embodiment, the sorting machine used to read and check the validity of the postage verification code is capable of communication with the Postal server 110. Having read the postage verification code, the
- 25 sorting machine sends the postage verification code to the postal server 110, where it is compared to those stored in the database 360. It will be appreciated that, if the database is not located at the postal server 110, the sorting machine will alternatively/additionally be
- 30 capable of communication with the host of the database 360, and sends the postage verification code to the host of the database 360 to confirm that it is a valid code.

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The host of the database 360, whether this is the postal server 110 or not, compares the postage verification code received from the sorting machine to those stored in the database. If the postage verification code received from the sorting machine matches a valid code stored in the database, the host of the database 360 informs the sorting machine that the code is valid. The host may then delete the corresponding code from the database 360, or change a characteristic associated with that code to indicate that it has been used, and therefore any future uses of the code are invalid.

Where a postage verification code is deemed invalid, the letter/parcel to which it has been applied can be treated as if postage has not been paid (i.e. as if no stamp has been affixed to the letter/parcel).

In general, the SMS interface server 370 will be provided, and maintained, by the relevant network operator of the GSM network 380. Therefore, the HTML message sent to the SMS interface server 370 by the postal server 110 may include the amount that the user is to be charged for the postage. The SMS interface server 370 can then extract this information from the message before converting the HTML message into an SMS message. Notably, the present invention resolves the problem of financial information being sent over the Internet by including the postage to be charged to the user in the user's mobile telephone bill. Alternatively, for pre-paid mobile phone account holders, the charge may be attributed to the mobile phone account by deducting an appropriate amount for the postage verification code from the user's account.

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Referring back to Figure 1, it can be seen that the present invention is not limited to the user requesting a postage verification code by way of an SMS request message. Any alternative means or message format of wirelessly requesting a postage verification code may be utilised. For example, assuming that the wireless user has a web-enabled wireless communication device, the wireless user may connect to the postal server 110 via the Internet 140, for example by accessing a website hosted by the postal server 110. Using the website, the wireless user provides the information required by the postal server 110 as well as the mobile telephone number of the user. The postal server 110 can then generate the postage verification code, and send it, for example, by SMS to the mobile phone 120 of the user. In a similar manner, the postal server 110 may host a wireless application protocol (WAP) site, which the user is able to access, for example, using a user's WAP-enabled mobile phone.

In a further example, the user is able to connect to the postal server 110 using a fixed wireline telephone, for example over a public switched telephone network (PSTN). The user can provide the postal server 110 with the required information in any suitable manner, for example using dual tone multi-frequency (DTMF) signals, voice recognition software provided by the postal server 110 or by speaking to an operator. In this context, it is envisaged that a charge associated with the postage verification code received over the PSTN can be attributed/charged to the user's fixed-line phone bill.

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It will be appreciated that the user using their mobile phone 120 could also achieve this.

It will be understood that the method for wirelessly obtaining a postage verification code, Postal server, wireless communication device and corresponding postal sorting machine, as described above, provides at least the following advantages:

10 (i) The user is provided with the ability to wirelessly request and receive postage verification codes at anytime, and from anywhere, so long as the user is able to connect to a wireless communication network, such as a GSM network, using a mobile phone, or similar
15 wireless communication device.

(ii) The user is not restricted by requiring access to the Internet, a problem suffered by the Deutsch Post Stampit system.

(iii) The user is not required to divulge
20 payment/account information over the Internet, thereby resolving another problem suffered by the Deutsch Post Stampit method.

(iv) The user is also not required to pre-pay for postage, thereby benefiting a user who infrequently sends
25 post or sends small amounts of post.

Whilst the specific and preferred implementations of the embodiments of the present invention are described above, it is clear that one skilled in the art could readily
30 apply variations and modifications that would still employ the aforementioned inventive concepts.

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Thus, a method for wirelessly obtaining a postage verification code, a Postal server, a wireless communication device and a corresponding postal sorting machine have been described where the aforementioned
5 disadvantages with prior art arrangements have been substantially alleviated.